## Section 1
### Role Overview

<table>
<thead>
<tr>
<th>Job title:</th>
<th>Research Fellow in Hybrid Electric Propulsion Architectures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancy reference:</td>
<td>3344</td>
</tr>
<tr>
<td>School/Professional Service Unit:</td>
<td>School of Aerospace, Transport and Manufacturing</td>
</tr>
<tr>
<td>Job type:</td>
<td>Full time Fixed Term Contract for 3 years</td>
</tr>
<tr>
<td>Hours of work:</td>
<td>37 hours per week, normally worked Monday to Friday. Flexible working will be considered.</td>
</tr>
<tr>
<td>Salary details:</td>
<td>Salary level 5 – range £33,309 to £37,127 per annum with additional performance related pay up to £46,409 per annum</td>
</tr>
<tr>
<td>Line Manager:</td>
<td>Panos Laskaridis, Senior Lecturer</td>
</tr>
<tr>
<td>Start date:</td>
<td>As soon as possible</td>
</tr>
<tr>
<td>Closing date for applications:</td>
<td>27 May 2020</td>
</tr>
</tbody>
</table>
Section 2
About Cranfield University

As the UK's only exclusively postgraduate university, Cranfield’s world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Cranfield's distinctive expertise is in our deep understanding of technology and management and how these work together to benefit the world.

Find out more about Cranfield, our history, and our rankings and awards [here](#).

Corporate Plan (415i)

Our corporate plan is designed to raise the ambition and enhance the distinctiveness of our University through our people (staff, students and alumni), the industry partners we work with and our unrivalled research facilities. To strengthen our distinctive position in higher education and to grow our University, we have raised our ambition through our 415i goals:

- 4 - 400 fully research-active staff
- 1 - deliver a UK top 10 learning experience
- 5 - achieve a 5% operating surplus
- i - impact, influence, international
What we value

We value ambition, impact, respect and community. These values inform how we work together and our relationships with our partners and students. We believe that success is not only about what we achieve, but *how* we achieve it. Our values help to define who we are, guide the way we work together and help to shape our decisions. Our shared values were developed with the active engagement of colleagues across the University:

**Ambition** – We aim high. We do all we can to achieve excellence.

**Impact** – We change people’s lives. We make the world a better place.

**Respect** – We value everyone’s expertise. We support each other.

**Community** – We build and cherish our Cranfield community. We embrace diversity.

Our shared, stated values help to define who we are and underpin everything we do. Find out more here.

Section 3

About School of Aerospace, Transport and Manufacturing

The School of Aerospace, Transport and Manufacturing (SATM) is a leading provider of postgraduate level engineering education, research and technology support to individuals and organisations. At the forefront of aerospace, manufacturing and transport systems technology and management for over 70 years, we deliver multi-disciplinary solutions to the complex challenges facing industry.

Visit the Cranfield website to learn more about the School’s current research activities, taught programmes and impact:

- Learn more about Aerospace
- Learn more about Transport Systems
- Learn more about Manufacturing

About the Centre for Propulsion Engineering

The Centre for Propulsion Engineering, within SATM at Cranfield, has a strong track record in power plant modelling and performance simulation. Research activities in the past 50 years cover virtually every aspect of the field, such as steady-state and transient performance simulation, diagnostics, novel cycles, engine control, advanced simulation methods etc. Participation in many EU projects gives a strong peripheral view as to the emergence of new methodologies and simulation tools. Centre for Propulsion staff run a large international activity embracing applied research, industrial short courses and leading MSc and PhD programmes. This enjoys global visibility and extensive links with industry.
The Power and Propulsion Sciences, within the Centre for Propulsion is placed between academia and industry. It carries out research with a strong engineering and industrial relevance. The core competence of the Group is its ability to undertake detailed systems design, performance simulation and optimization studies through a systems engineering approach involving aero-thermo, multi-disciplinary models to improve and extend our understanding of highly integrated aerospace and propulsion systems.

**Organisational Chart**

![Organisational Chart](image)

**Section 4**

**Job Details**

**Job Purpose**

This is a unique opportunity to work at the forefront of Aircraft Electrification and contribute to Sustainable and Zero Emissions Aviation. We are looking for enthusiastic highly motivated researchers to join one of the leading European consortia working in Aircraft and Propulsion Electrification. The research is part of a major European Project Called Futprint50 and focuses on the electrification of a 50 passenger aircraft. You will have the opportunity to work closely with world leading researchers and industrial engineers on the design, modelling, integration and analysis of hybrid electric systems and architectures. An exciting opportunity to join a growing team within the Hybrid Electric Propulsion Group at Cranfield and influence the future of the aerospace industry
Key Deliverables

<table>
<thead>
<tr>
<th>Description of Deliverables</th>
<th>% of time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contribute to the technical work and deliverables of the Horizon 2020 research project and develop/analyse hybrid electric propulsion architectures</td>
<td>70%</td>
</tr>
<tr>
<td>Contribute to the day to day management of the project</td>
<td>15%</td>
</tr>
<tr>
<td>Support MSc, PhD student supervision and grant proposal writing</td>
<td>15%</td>
</tr>
</tbody>
</table>

Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the School and / or University.

Planning and organising

You would be expected to contribute and support the technical work and planning associated with the development and performance analysis of Hybrid Electric Propulsion Architectures within the Futrpint2050 project.

Deadlines will need to be met to deliver reports, presentations, project deliverables and software models/tools. Research activities will often involve collaboration with industrial partners and other academic institutions and you will need to be able to demonstrate that you can work and communicate effectively to ensure project goals are met.

Communicating and influencing

You will need to work and communicate with:
- Head of Hybrid Electric Propulsion Group
- Project Principal Investigator
- Other researchers
- Industrial clients and external academic partners
- PhD and MSc students

You will be required to present your research, approach and outcomes to senior and specialist industrial partners. You will also need to ensure that the outputs of your research are communicated in high-quality peer-reviewed journals.

Problem solving

You will be a confident and independent researcher. Using knowledge and initiative to resolve issues and queries. Evaluating the research risk and constructing an appropriate response.

Problems will typically be encountered in your own research work and in contract work for industry. Knowing who to refer problems to if they cannot be dealt with at source.
Decision making

I) Decisions you will take without reference to others
- Day-to-day management and planning of on-going research within the overall specifications provided by the project plan.
- Approaches to process, analyse and represent the data outputs.
- Draft delivery of high quality research and reports to deadline and quality standards.
- Active participation in the implementation of health and safety procedures in the areas in which you work.
- Drafting reports, minutes, actions and papers.
- Identifying, collating and communicating associated research papers and reports.

II) Decisions you will refer to your manager/colleagues
- Aspects potentially affecting the operation of the project or the outcome of the results, such that they will have influence on the success of the project meeting the specified goals.
- Decisions affecting the relations with industrial and other academic partners
- Decisions related to the strategy and overall plan of the research
- Aspects related to the integration of different aspects of modelling and experimental work
- Developing new research proposals, consultancy work and sources of funding.
- Balancing research, project management and publication/proposal related activities.
- Activities to enable the dissemination and exploitation of research results.
- Budgetary issues related to research contracts.
- Decisions that involve modifications to contracted deliverables.

Guiding framework

You will be expected to operate within the academic quality assurance processes of the University including those covering research ethics.

Formal guidance will come from the Head of Group who will set objectives and strategies to achieve those objectives as discussed. A personal development review process provides the opportunity to raise issues relating to work environment and career objectives including opportunities for promotion.

Impact

Growth in wealth, reputation and capabilities of the activities within the Propulsion Engineering Centre, SATM and Cranfield University. These are:

- Research Activity
- Delivery of Research objectives
- Reputation development through publications and research dissemination.
- Project supervision.
Facts and Figures

Cranfield is the only University with a dedicated Hybrid electric Propulsion Group and has one of the most active and influential teams worldwide on the subject of electrification.

Cranfield University excels in strategic and applied research. In the latest 2014 Research Excellence Framework (REF), 81% of our research was considered ‘world leading’ or ‘internationally excellent’ in its quality. We are in the top 40 in the world for Engineering - Mechanical, Aeronautical and Manufacturing (QS world rankings 2019). The only other UK institutions in the top 40 are Cambridge, Oxford, Imperial College London and Manchester.

Cranfield is a ‘Top 5’ research institute, based on commercial income. We are second only to Imperial College London, in terms of research power in REF 2014.

Our world class academics, with proven research records, are in constant touch with industry through research, consultancy and product development. 3,800 students from over 100 countries study either full- or part-time, or in parallel with their career.

100+ PhD students registered in 2019/2020 academic year and 150+ master candidates in the Propulsion Engineering Centre

14 – 17 is the typical number of short courses delivered within the Centre per annum, with approximately 300 – 400 attendees in total.

Annual turnover for the Centre is approx. £6,000,000

Section 5
Am I suited to this role?

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Essential</th>
<th>Desirable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education / Qualifications</td>
<td>PhD (or close to completion) in a relevant topic (systems modellings and analysis, aircraft or propulsion design and performance) or significant industrial experience in systems engineering</td>
<td>Relevant industrial experience</td>
</tr>
<tr>
<td>Experience</td>
<td>Participation in industrially sponsored research</td>
<td>Project or research management experience</td>
</tr>
<tr>
<td></td>
<td>Proven track record of publishing in high quality journals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proven experience of leading Research Activities</td>
<td></td>
</tr>
</tbody>
</table>

www.cranfield.ac.uk
<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills / Aptitudes</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modelling and performance of complex systems</td>
<td>Good communication, presentation and report/paper writing skills</td>
<td>Ability to demonstrate our values: Ambition, Impact, Respect and Community.</td>
</tr>
<tr>
<td>Design and Performance of aircraft and propulsion systems</td>
<td>Ability to work with others and collaborate effectively</td>
<td></td>
</tr>
<tr>
<td>Ability to work on interdisciplinary aspects related to systems engineering and propulsion systems integration</td>
<td>Good computational and system modelling skills</td>
<td></td>
</tr>
<tr>
<td>Practical application of computational simulation techniques and modelling</td>
<td>Working knowledge of any of the following: Python, Matlab, C, C++, Modelon, Modelica</td>
<td></td>
</tr>
</tbody>
</table>

**Values**

Ability to demonstrate our values: Ambition, Impact, Respect and Community.